

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:)	Confirmation No.: 4819
Daisuke KUMAKI et al.)	Examiner: Phat X. Cao
Serial No. 10/582,249)	Group Art Unit: 2814
Filed: June 9, 2006)	
For: LIGHT EMITTING ELEMENT AND)	
LIGHT EMITTING DEVICE USING)	
THE SAME)	

RESPONSE

Honorable Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The Official Action mailed May 12, 2010, has been received and its contents carefully noted. This response is filed within three months of the mailing date of the Official Action and therefore is believed to be timely without extension of time. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on June 9, 2006; September 26, 2008 and July 30, 2009.

Claims 1-38 are pending in the present application, of which claims 1, 2, 4, 5, and 7 are independent. The Applicant notes with appreciation the indication of the allowance of claims 7, 16, 17, 22-24, 28, 37 and 38. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

Paragraph 3 of the Official Action rejects claims 1-6, 8-15, 18-21, 25 and 29-36 as anticipated by U.S. Patent No. 6,717,358 to Liao. The Applicant respectfully traverses the rejection because the Official Action has not established an anticipation rejection. Paragraph 5 of the Official Action rejects claims 26-27 as obvious based on

Liao. The Applicant respectfully traverses the rejection because the Official Action has not made a *prima facie* case of obviousness.

As stated in MPEP § 2131, to establish an anticipation rejection, each and every element as set forth in the claim must be described either expressly or inherently in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

As stated in MPEP §§ 2142-2144.04, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some reason, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some reason to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art does not teach, either explicitly or inherently, or suggest all the features of the independent claims. Specifically, independent claims 1, 2, 4 and 5 recite a light emitting element comprising a first layer, a second layer and a third layer interposed between a first electrode and a second electrode and that the light emitting element emits light when a voltage is applied between the first electrode and the second electrode such that a potential of the second electrode is higher than that of the first electrode. Independent claim 1 further recites that the first layer generates a hole and

that the second layer generates an electron. Independent claims 2, 4 and 5 recite similar but variedly claimed subject matter. For the reasons provided below, the Applicant respectfully submits that Liao does not teach or suggest the above-referenced features of the present invention, either explicitly or inherently.

The Official Action asserts that Liao discloses “the light emitting element emits light when a voltage is applied between the first electrode 110 and the second electrode 140 such that a potential of the second electrode is higher than that of the first electrode” (page 2, Paper No. 20100507). The Applicant respectfully disagrees and traverses the assertions of the Official Action. One of ordinary skill in the art would readily appreciate that the second electrode, having the higher potential, is an anode, while the first electrode, having the lower potential, is a cathode. However, the Official Action’s apparent assertion that the alleged second electrode 140 of Liao is an anode and that the alleged first electrode 110 is a cathode contradicts the positional relationship of the cathode and anode of Liao. That is, Liao discloses an anode 110 and a cathode 140. In any event, it is respectfully submitted that the device of Liao would be rendered inoperable if this bias of the asserted electrodes were reversed, as the Official Action appears to suggest. Therefore, it is respectfully submitted that Liao does not disclose, either explicitly or inherently, that a light emitting element emits light when a voltage is applied between the first electrode and the second electrode such that a potential of the second electrode is higher than that of the first electrode.

Furthermore, the Official Action asserts that Liao discloses “a light emitting element comprising: a 1st EL UNIT 120.1 of HTL/ETL ... including a first layer HTL (hole transporting layer) for generating hole (or p-type) and a second layer ETL (electron transporting layer) for generating an electron (or n-type)” (page 2, Paper No. 20100507). The Applicant respectfully disagrees and traverses the assertions of the Official Action. Liao discloses that “holes [are] injected from the anode 110 into the first organic EL unit 120.1 and electrons [are] injected from cathode 140 to the Nth organic EL unit 120.N” (Liao at column 5, lines 34 to 38). Liao further discloses that “electrons

and holes are generated in, and separated from, each of the connecting units (130.1—130.(N-1))”, that the generated electrons “are injected towards the anode and into the adjacent organic EL unit 120.(x-1)” and that the generated holes “are injected towards the cathode and into the adjacent organic EL unit 120.x” (Liao at column 5, lines 38 to 45). Therefore, it is respectfully submitted that Liao does not disclose, either explicitly or inherently, that holes and electrons are *generated* in the organic EL units 120.x. It is further noted that connecting units 130.1 to 130.(N-1) do not contact the cathode and anode. Accordingly, Liao only potentially discloses that electron and hole generation occurs in connecting units 130.1 to 130.(N-1) and **not** in the alleged first layer HTL or second layer ETL of Liao’s EL unit 120.1, which are merely subjected to injection and transport of the respective holes and electrons.

In any event, the Applicant respectfully submits that the specific structure and sequencing of layers in Liao’s connecting unit is of particular importance to the device’s operation. Specifically, Liao discloses that the structure of the connecting unit “comprises, in sequence, an n-type doped organic layer 131, an interfacial layer 132, and a p-type doped organic layer 133,” illustrated in Figure 2 (Liao at column 6, lines 45 to 48). One of ordinary skill in the art at the time of the invention, practicing Liao, would readily understand that the structure illustrated in Figure 2 must be maintained to provide an operable cascaded OLED and that varying the sequence of layers to eliminate the interfacial layer results in unstable emission behavior (see, Examples 2 and 3 of Liao). Therefore, if the discrete layers of Liao’s connecting unit were to be asserted against the claims of the present invention, it is further submitted that one of ordinary skill in the art at the time of the invention would not have merely implemented the p-type doped organic layer 133 and the n-type doped organic layer 131 apart from the interfacial layer interposed therebetween and that implementing these layers in such a manner would render Liao inoperable for its intended function.

Therefore, the Applicant respectfully submits that Liao does not teach a light emitting element comprising a first layer, a second layer and a third layer interposed

between a first electrode and a second electrode and that the light emitting element emits light when a voltage is applied between the first electrode and the second electrode such that a potential of the second electrode is higher than that of the first electrode, either explicitly or inherently.

Since Liao does not teach or suggest all the elements of the independent claims, either explicitly or inherently, anticipation and obviousness rejections cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 102 and § 103 are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized to charge fees under 37 C.F.R. §§ 1.16, 1.17, 1.20(a), 1.20(b), 1.20(c), and 1.20(d) (except the Issue Fee) which may be required now or hereafter, or credit any overpayment to Deposit Account No. 50-2280.

Respectfully submitted,



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